

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/CH2004/000046

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 F25B40/00 F25B5/04 F25B41/06

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 F25B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 533 352 A (HERROON GREGORY P ET AL) 9 July 1996 (1996-07-09) column 3, line 11 - column 8, line 23; claims 1-30; figures 1-11	1, 14-21
Y	figure 1	2-4, 6, 7, 12
X	US 6 293 123 B1 (IRITANI KUNIO ET AL) 25 September 2001 (2001-09-25) column 3, line 66 - column 15, line 15; figures 1-15	1, 10, 11, 14-21
X	US 6 446 450 B1 (PRESSLER KEVIN T) 10 September 2002 (2002-09-10) column 2, line 65 - column 5, line 15; figures 1, 2	1, 14-21
	----- -/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but, cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*G\* document member of the same patent family

Date of the actual completion of the international search

1 December 2004

Date of mailing of the international search report

24. 01. 2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Szilagyi, B

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/CH2004/000046

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 24 51 361 A (JAKOB) 6 May 1976 (1976-05-06) Seite 3 - Seite 10; Abbildung	1, 14-21
Y	EP 0 325 163 A (LINDE AG) 26 July 1989 (1989-07-26) Spalte 1, Zeile 51 - Spalte 2, Zeile 3; Anspruch 1; Abbildung	12
E	WO 2004/053406 A (BMS ENERGIE-TECHNIK AG ; MEISTER REMO (CH)) 24 June 2004 (2004-06-24) page 2 - page 8; figures 1-15	1
Y	US 3 640 086 A (BRODY HERBERT M) 8 February 1972 (1972-02-08) column 1, line 18 - column 5, line 6; figures 1-4	2
A	US 6 438 978 B1 (BESSLER WARREN FRANK) 27 August 2002 (2002-08-27) column 2, line 43 - column 13, line 41; figures 1-6	3
Y	US 5 150 584 A (SCHMIDT ANNETTE M ET AL) 29 September 1992 (1992-09-29) column 2, line 7 - column 3, line 68; figures 1-4	3, 4
A	US 6 330 802 B1 (CUMMINGS ROBERT W ET AL) 18 December 2001 (2001-12-18) column 2, line 52 - column 5, line 54; figures 1, 2	3, 4
A	EP 1 043 550 A (ZEXEL CORP) 11 October 2000 (2000-10-11) paragraph '0018! - paragraph '0043!	7
Y	WO 03/051657 A (PETTERSEN JOSTEIN ; NEKSAA PETTER (NO); AFLEKT KAARE (NO); HAFNER A) 26 June 2003 (2003-06-26) page 6 - page 23	6, 7

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/CH2004/000046

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5533352	A	09-07-1996	CN 1121165 A JP 8105651 A	24-04-1996 23-04-1996
US 6293123	B1	25-09-2001	JP 2001041601 A	16-02-2001
US 6446450	B1	10-09-2002	NONE	
DE 2451361	A	06-05-1976	DE 2451361 A1	06-05-1976
EP 0325163	A	26-07-1989	DE 3801711 A1 EP 0325163 A1	27-07-1989 26-07-1989
WO 2004053406	A	24-06-2004	WO 2004053406 A1	24-06-2004
US 3640086	A	08-02-1972	NONE	
US 6438978	B1	27-08-2002	NONE	
US 5150584	A	29-09-1992	NONE	
US 6330802	B1	18-12-2001	NONE	
EP 1043550	A	11-10-2000	JP 11193967 A EP 1043550 A1 US 6260367 B1 WO 9934156 A1	21-07-1999 11-10-2000 17-07-2001 08-07-1999
WO 03051657	A	26-06-2003	NO 20016217 A EP 1458581 A1 WO 03051657 A1	20-06-2003 22-09-2004 26-06-2003